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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,862	09/24/2003	Richard J. Martin	2003P14536US	4383

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Siemens Corporation  
Intellectual Property Department  
170 Wood Avenue South  
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EXAMINER
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PIPALA, EDWARD J

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 07/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/669,862	MARTIN, RICHARD J.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Edward Pipala	3663	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/7/06.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This Office Action is in response to Applicant's amendment and remarks filed 4/7/06. Claims 1-7 have been canceled and claims 8-19 are still pending.

In light of Applicant's amendment to the claim(s), and arguments filed in the above noted response, the previous rejection of claims 8, 13, 14 and 16-18 as being anticipated by Herron et al. under 35 USC 102(b) is withdrawn.

### ***Claim Objections***

2. Claim 8 is objected to because of the following informalities: in line 6 "operation" should be replaced with "operational" so as to use the same claim language as in the line above wherein "operational" is recited. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 9 and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herron et al. (6,343,251) in view of Henry et al. (6,845,306).

Independent claim 8 recites a method of tracking turbine components comprising; the marking of a plurality of turbine components, placing the marked turbine components in a plurality of turbines, operating the turbines, obtaining operational data from the turbines via at least one control system, uploading the operational data from the turbine control systems to a central processing station, and using the uploaded data at the central processing station to track desired aspects of the marked turbine components.

Herron et al. discloses a method for monitoring the operation and predicting the part life consumption of turbomachinery such as a gas turbine in an electric powerplant, wherein data regarding the operation of said gas turbines is collected and analyzed so as to provide reports of the operational hours, operating conditions, number of starts, etc., so as to aid in determining the operational life of the turbomachinery (turbine) parts, and for scheduling maintenance as necessary. In the background of the invention (col. 1, ll. 33-40) Herron et al. discloses that it is well known for gas turbines to have many parts and components that are exposed to corrosive combustion gasses, extreme temperatures, centrifugal stresses and other adverse operating conditions, and that these conditions impose stresses and corrosive elements on the gas turbine that cause wear, strain, fatigue, corrosion and other harmful effects on the major rotating components such as the shaft, turbine and compressor. Column 1, line 53 through col. 2, line. 7 discloses that the components that generally require much attention to maintenance also includes such basic gas turbine components as control devices, fuel

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metering equipment, gas turbine auxiliaries, load packages, for which preventive maintenance and replacement of parts is scheduled based on the operation history of the gas turbine (col. 1, l. 64 – col. 2, l. 7 in particular). Column 5, lines 1-9 of Herron et al. discloses that sensor signal data may be processed by the controller (14) and outputted as operational data to an on-site monitor (OSM, 16), which may be a local computer system on site at the facility with the gas turbine (where the OSM may monitor several turbines at a particular facility), and that the OSM may monitor data in both real time as well as maintain historical data regarding past operational activities of the gas turbine collected from each gas turbine in one or more databases. Further, col. 5, ll. 10-32 disclose the use of a remote database (18) to which the OSMs upload (i.e., its downloaded by the remote database) information regarding many gas turbines and for which maintenance factors that influence part life are collected and stored, and for which maintenance is scheduled depending on the major operating factors stored and detected in the remote database.

However, Herron et al. do not particularly teach or otherwise disclose marking the plurality of turbine components used in the turbines, even though it is notoriously old to use inherent “markings” such as serial numbers on parts for the purpose of identifying individual items that are otherwise similar (e.g., have the same part number).

Henry et al. (previously cited by the Examiner), disclose a component trend monitoring system for monitoring the performance of components (first lines of the abstract), and comparing the performance with stored performance data to accurately trend and predict the failure of components through the use of computer chips attached

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to various components which receive and store historical and performance data about each component, and a processor for retrieving the stored data from the memory chips. In col. 1, Henry et al., teaches the use of this monitoring or tracking system in conjunction with aircraft auxiliary power (APU) units which are generally gas turbine engines used on aircraft to supply pneumatic power and/or shaft horsepower when the primary propulsion engines are not running, that an APU may include (among other ancillary parts), a combustor (20) having a primary fuel nozzle (22), a turbine (26), a gearbox (32), an electric generator (34), a lube pump (36), a fuel control unit (38) and a starter motor (40), and that when one of these components fails it may be easily removed by detaching it and replacing it with a new component. In col. 1, line 64 through col. 2, line 9+ of Henry et al., teaches that the APU has a data memory module (DMM) that collects and stores APU operational and performance data as well as the serial number of the APU, which is used for tracking APU health and operating conditions since these types of line replaceable units (LRUs) are often unnecessarily replaced, exchanged or discarded when thought to have failed. In col. 2, line 42 through col. 3, line 4 Henry et al., discloses that the earlier discussed memory chips are imbedded in each LRU during its build, that the data contained therein describes the component by serial number, part number, as-built performance, and other pertinent data which is loaded on a smart chip for keeping track of LRU usage (hours and cycles), and for use with monitoring software that will track and compare the LRU usage and performance to determine when it has failed or is about to fail so as to reduce the chance for an unscheduled replacement thereby reducing operational cost. Further, in

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col. 3, ll. 58-62 Henry et al. teaches that these chips may be located with any component where there may be a need to track usage or where there may be a desire to know when a component has failed or is about to fail, where the following paragraph again teaches the use of part number as well as serial number information (data).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the serial number and/or part number tracking taught by Henry et al., within the context of the turbine monitoring method of Herron et al., because both are directed to the field of monitoring the operating conditions of gas turbines for the purpose of monitoring the components thereof and scheduling maintenance or replacement of those components in a cost effective manner.

With respect to claim 9, which recites identifying a location where at least a portion of the turbine component was manufactured, please see col. 3, line 63 through col. 4, line 4 of Henry et al., which disclose that the data stored on the chips may include the part number, serial number, build location, ... and any other data as deemed necessary.

With respect to claim 12, which recites identifying a repair procedure that at least a portion of the turbine component underwent, please col. 4, ll. 1-3 wherein Henry et al. further discloses that the data stored on the chip may also include data or information with respect to whether the part is new or repaired, and the type of repair if the part has been repaired.

With respect to claim 13, which recites that the operational data stored is selected from the group comprising equivalent base hours and equivalent starts, please see at least col. 2, line 26–44 of Herron et al., as well as col. 2, ll. 48-50 and col. 6, ll. 1-4 of Henry et al.

With respect to claim 14, which recites that the operational data includes the turbine in which the component is placed, please see at least col. 12, ll. 49-58 of Herron et al. which teaches that the summary reports for various turbines are associated with or represented by serial numbers in column (1402) of figure 12, as well as col. 4, ll. 27-35 of Henry et al., in which it is taught that the chips located with the LRUs may be programmed to look at the first two memory locations for a part number and serial number of an LRU in order to determine if this is a new LRU or if it had been replaced as well as col. 5, line 66 through col. 6, line 4 which discloses monitoring the LRUs individually by part and serial number.

With respect to claim 15, which recites that one of the desired aspects [being tracked] is remaining life of the turbine component, please see at least col. 2, ll. 26-28 of Herron et al. which discloses predicting the expected operating life of various components of a turbine as well as at least col. 2, ll. 53-60 of Henry et al. which teaches the use of monitoring software to track and LRU and determine when a component has failed or is about to fail (i.e., remaining useful life).



With respect to claim 16, which recites that the desired aspect of the turbine component includes a description of the turbine component, please again see at least col. 2, ll. 42-52 of Henry et al. wherein it is taught that the memory chip embedded in each LRU contains data that describes the component by serial number, part number, as-built performance, etc.

With respect to claim 17, which recites that the turbine is a land based combustion turbine engine, and claim 18 which recites that the turbine is a part of a powerplant that produces electricity, please see the whole of Herron et al.

4. Claims 10, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herron et al. and Henry et al. as applied to claim 8 above, and further in view of Isobe et al. (6,636,813).

The combination of Herron et al., and Henry et al., taught above with respect to independent claim 8, provides for a method of tracking desired aspects of marked turbine components using data obtained and uploaded from turbine control systems to a central processing station, but fails to address the composition from which at least a portion of the turbine component was manufactured (claim 10), identify a manufacturing step (claim 11) or perform statistical analysis on the operational data to help estimate the cost of a repair operation (claim 19).

Isobe et al. discloses a service life management system for high temperature parts of a gas turbine in which a server manages a plurality of client systems (subprograms) that are dedicated to different objects and share respective element data such as real component damage, design materials, etc. which are necessary for the evaluation of remaining life and enables the operation of the gas turbine to be optimized based on the damage of the evaluated parts thereby contributing to the operational cost reduction of the gas turbine (from the abstract). What Applicant refers to as a statistical analysis is referred to as an analytical evaluation and as a result of tendency evaluation by Isobe et al., as shown in at least figure 3, figures 6B and 6C, figure 7, figure 8, figure 14, figure 15, and especially in figure 16 wherein flow chart block (12) includes a cost evaluation database. The composition and manufacturing step considerations of claims 10 and 11 are considered to include whether or not a thermal barrier coating is or has been applied (a material composition, in addition to that of the turbine blade material itself), and the coating of the blade is also considered to be a manufacturing process step with the context of claim 11. Column 3, lines 6-27 and 49-63 disclose the essence of the remaining life management system of Isobe et al. as it pertains to the above claims in question, where col. 6, ll. 1-35 further teach the evaluation process for turbine parts and the evaluation of their remaining life. Column 10, lines 22-28 and col. 12, ll. 25-57 disclose calculating a total cost for repairing a particular component.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the teachings of Isobe et al., within

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the context of the above combination of Herron et al. and Henry et al., because all three are directed to the monitoring of turbine systems for the purpose of determining the useful life or eminent failure of a component so as to operate the turbine system in the most cost effective manner and without unnecessary disruption or delay.

### ***Response to Arguments***

5. Applicant's arguments filed 4/7/06 with respect to claims 8-19 have been considered but are moot in view of the new ground(s) of rejection.

The previous rejection of the claims as being either anticipated by Herron et al., or obvious over Herron et al. in view of Isobe et al., has/have been withdrawn in light of Applicant's amendment and remarks which now clarify that marked turbine components are tracked by Applicant's method.

In the above rejection of independent claim 8, and with respect to the teachings of Henry et al. in particular, the components thereof can be considered to be "marked" in either or both of by the embedding of memory chips in each of the LRUs as taught in lines 42-43 of col. 2, and by the use of component serial numbers (or even part numbers for that matter as it concerns the claims) which is taught in the latter part of this same paragraph and has now been clearly pointed out in the above rejection.

Then there's the issue that it is notoriously old to "mark" items when they are manufactured with indicia such as a serial number for the exact purpose of being able to

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track and distinguish similar looking items, such as turbine blades, from one another for the purpose of determining ownership (or in warranty situations as taught by Henry et al. in the first lines of column 3. Even Applicant's commonly assigned and incorporated by reference published patent applications do not seem to suggest that the use of serial number is anything but old in the art, especially since the manner or type of markings is not being claimed. And if it were there would no doubt be some question of double patenting.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Pipala whose telephone number is 571-272-1360. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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